



U.S. AIR FORCE

Framing the C4ISR Enterprise

A Technical Perspective



**Mr. Ed Green
ESC/CX
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Transformation & Network-Centric Warfare

The Call for Change



BMC3 Horizontal Integration

National Defense Authorization Act for Fiscal Year 2001, 106-292 Network Centric Warfare Sec. 906

"NCW is about networking capabilities, rather than creating separate networks or technologies, and is a means to generate greater combat power, dominance and synergy through a **linking of critical information**

House Appropriations Committee, 106-644, June 1, 2000

"Without a networked approach, it remains unclear to the committee if the intelligence currently gathered from these platforms can be properly and timely exploited and disseminated to the tactical commander, which calls into **question the wisdom of simply buying more of the same "un-networked" assets.**"

"Therefore, the committee directs that

James G. Roche, Secretary of the Air Force

"We will network these systems in ways that enable us to find, fix, track, target, engage and assess in timelines unimaginable just a few years ago. It is our goal to have consistent, persistent

Gen John Jumper, CSAF, "Solving Problems for the Future" "We are going to figure this out. We are going to figure out how to have conversations between airborne platforms, unmanned, on the ground, in the air. **Build us a constellation that marries up the manned and the unmanned, perhaps control the unmanned platforms** from the manned platforms to put them in the right position so you can triangulate for precise target location, precise identification. **Create that network in the sky that will pass the information around."**



Realizing Enterprise Integration

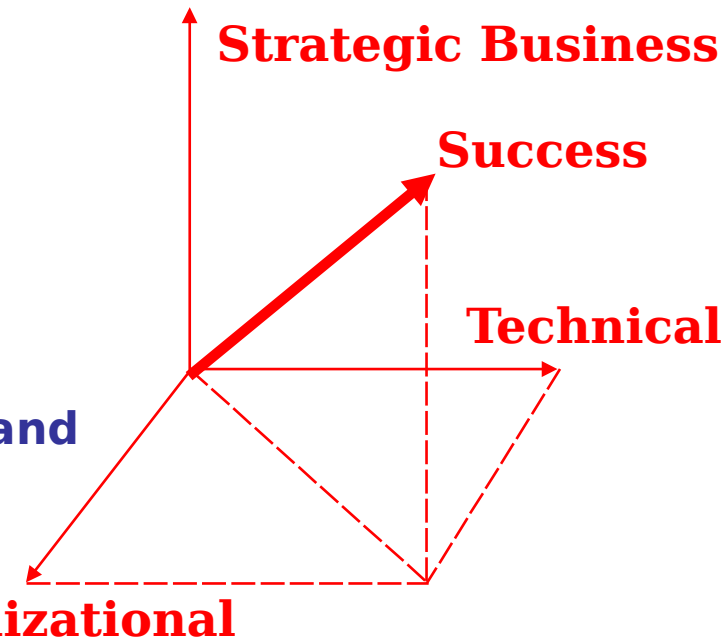
Managing the Multiple Dimensions and Cultures Makes it Difficult



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BMC3 Horizontal Integration

- C2EI is about the *Business Strategy* of C2!
 - It's about the warfighter
 - It's about the Operational capability
 - It's about time-to-market
 - It's NOT about Business as Usual!
- Its also about *Engineering and Technology*
 - System-of-Systems approach
 - Engineering predicated on architecture and simulation environments
 - Highly leveraged on commercial IT technology...
- C2EI is about the *Organization*
 - ... And it's a leveraged organization
 - No one contractor, nor contract will do this alone
 - We must create a coalition among AF organizations and industry partners
 - It's about enterprise accountability





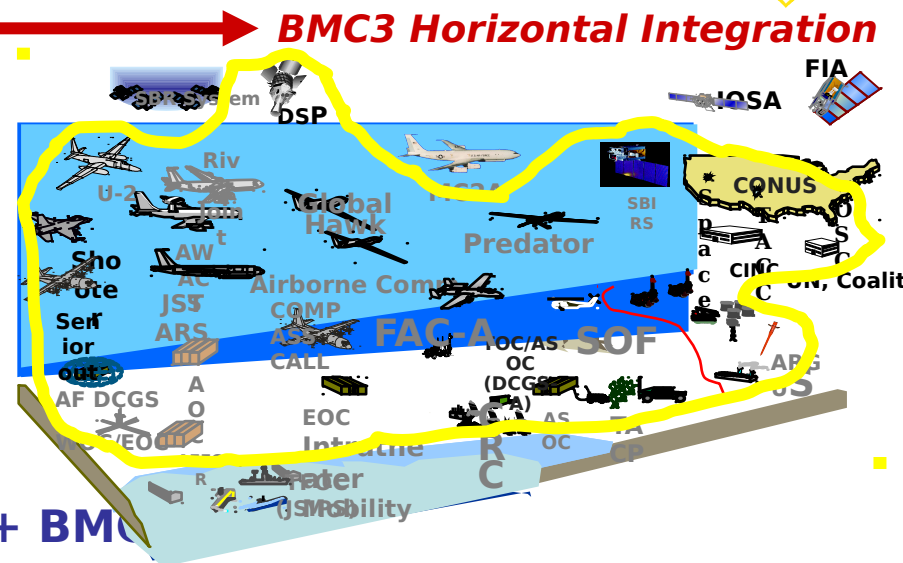
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C2 Constellation *Strategic Business*



C2 Constellation is....

- Network-Centric
- Peer-based
- System of Systems
 - Networks + Sensors + C2 Nodes + BMC
- AF approach to leveraging Network-Centric solutions
 - For increasing today's C4ISR capability and
 - Achieving tomorrow's AF Transformation Flight Plan vision
- C2C provides a decision-quality information exchange environment, with capabilities fielded on...
 - Advanced Technology command centers (AOC, DGS, BCS)
 - Next generation GMTI - AMTI - EW aircraft (MC2A)
 - Unmanned aerial vehicles (UAVs)
 - Space-based systems





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NCW Foundations

Technical and Engineering



- **Infrastructure Grid**

- Provides computing and communications backbone
- Enables network centric operational architectures

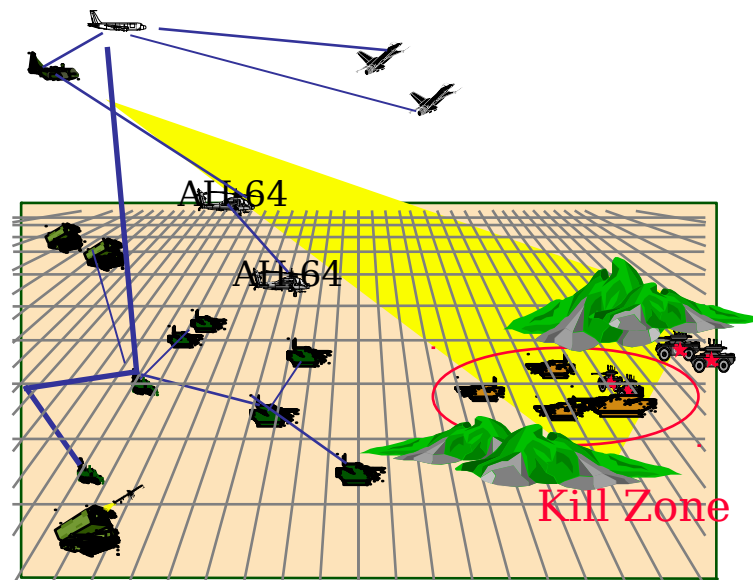
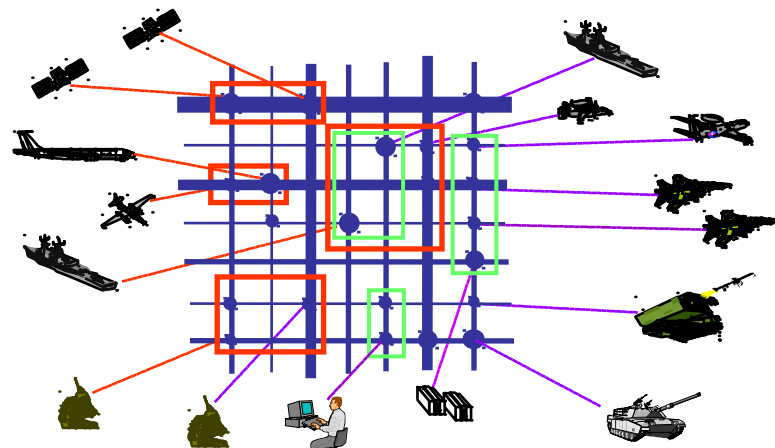
- **Sensor Networks**

- Enable Battlespace Awareness
- Synchronize Battlespace Awareness with combat operations
- Increase the Velocity of Information

- **Engagement Networks**

- Exploit Battlespace Awareness to generate increased Combat Power
- Enable massing of effects Vs. massing of forces
- Maximize Joint Combat Power

BMC3 Horizontal Integration





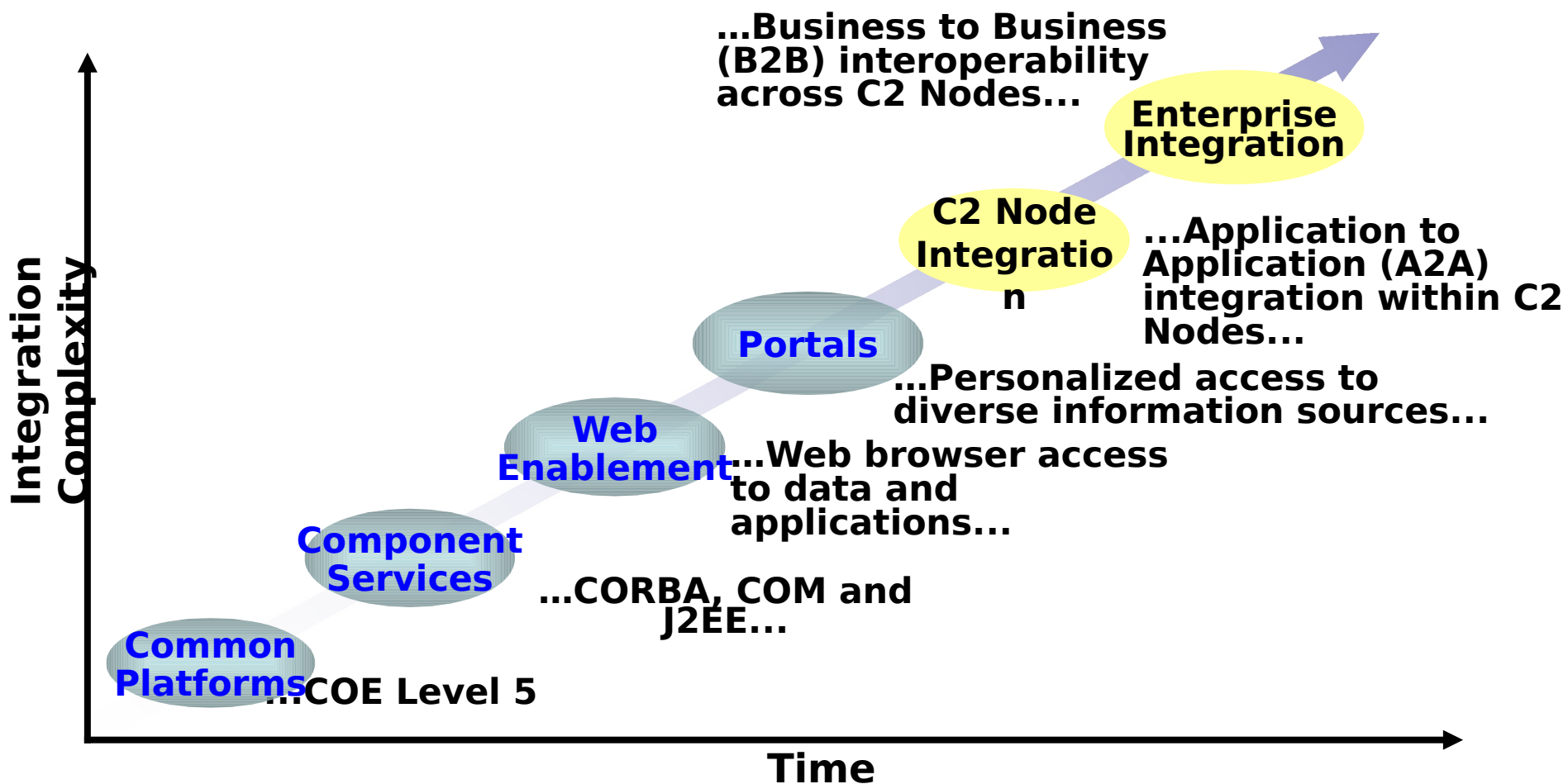
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Leveraging IT Evolution

Technical and Engineering



BMC3 Horizontal Integration





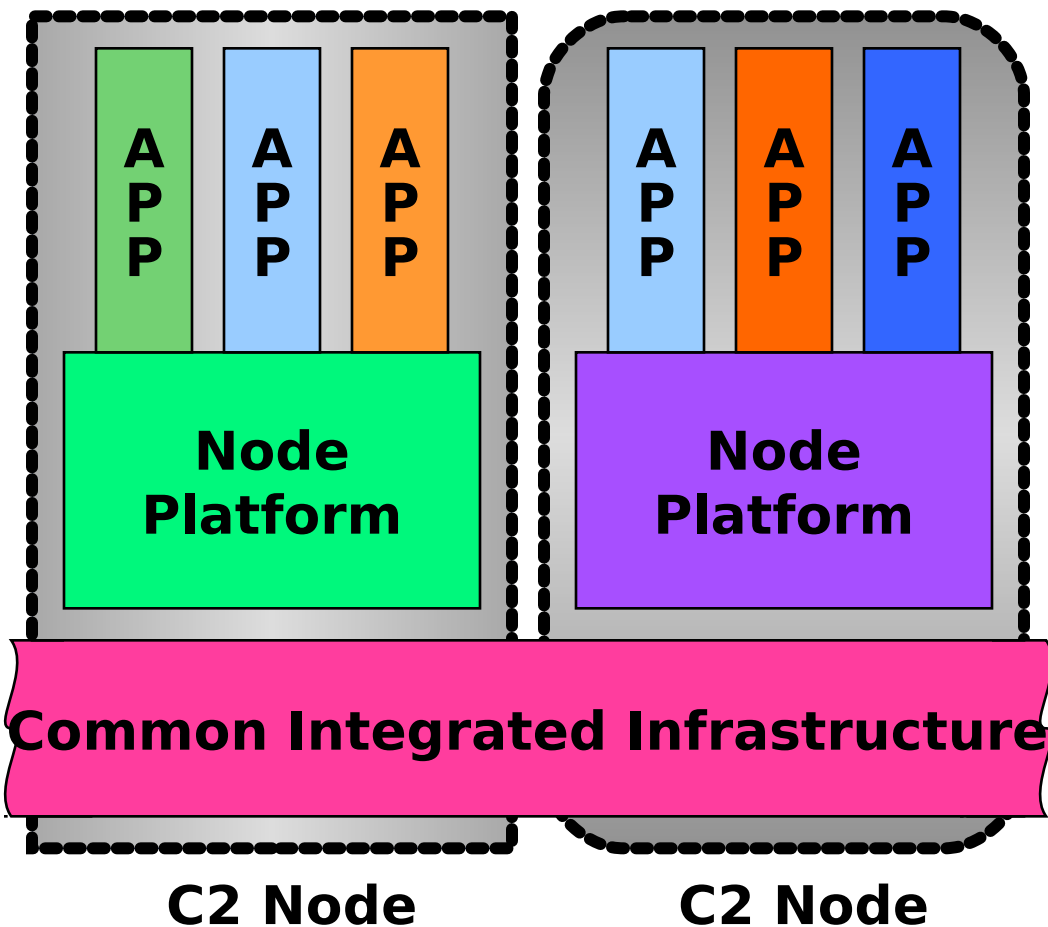
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C2 Enterprise Reference Architecture

Technical and Engineering



BMC3 Horizontal Integration



- Three technical components
 - Mission Applications
 - C2 Node Platform (local infrastructure)
 - Common Integrated Infrastructure (CII)
- Two management elements
 - Acquisition of applications and node platforms
 - Enterprise integration guidelines between the node platforms

Net-Centric Enterprise Services



C2 ad Intelligence Capabilities

✓ Track
Management

✓ Situation
Awareness

✓ Alert

✓ Messaging
and Parsing

✓ Fusion and
Correlation



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C2ERA: Managing Complexity

Technical and Engineering



BMC3 Horizontal Integration

- **Think of the enterprise as a complex ecosystem**
 - Warfighter capabilities emerge from the ecosystem
- **The C2ERA provides the “enterprise rules” for**
 - C2 Nodes - focal points for Requirements, Mission Capabilities, Programs, Dollars
 - C2 Nodes have autonomy to build their own infrastructure
 - But they must interconnect through a common set of Enterprise Services
 - Enterprise Services - the enterprise “Universal Adapter” that enables C2 Nodes to
 - Interconnect
 - Exchange information

The C2ERA is the Blueprint for providing

- The infostructure - as enterprise services and
- C2 Node capabilities - as information